AMERICAN JOURNAL OF OPTOMETRY

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AMERICAN JOURNAL OF OPTOMETRY
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FURTHER RESEARCH WITH THE MYOPHORIAGRAPH

A. J. Esdaile, F. B. O. A.
Newport, England

The Myophoriagraph is an instrument which gives graphic expression to all defects of the eye muscles (Myo—the eye, Phoria—muscle condition, Graph—written record), while the eyes are in a dynamic state. All recti and oblique muscles are tested and their strength or weakness noted in their relationship to accommodation.

The instrument explores what may be termed (for want of a better explanation) the mental area of visual optics, and gives this area relative to both eyes. The act of graphing is actually induced by a mental projection through the right eye of a moving object actually seen by the left. A fixed prism is rotated by motor before the left eye and a mirror, on which a small luminous disc is reflected, is placed in front of the same eye at an angle. The turning of the prism at the carefully controlled speed causes the luminous disc to describe a circle, but the circular movement is not registered by the left eye actually looking at it, but by the right eye, and it is seen upon a blank screen at a certain distance behind the back of the angled mirror.

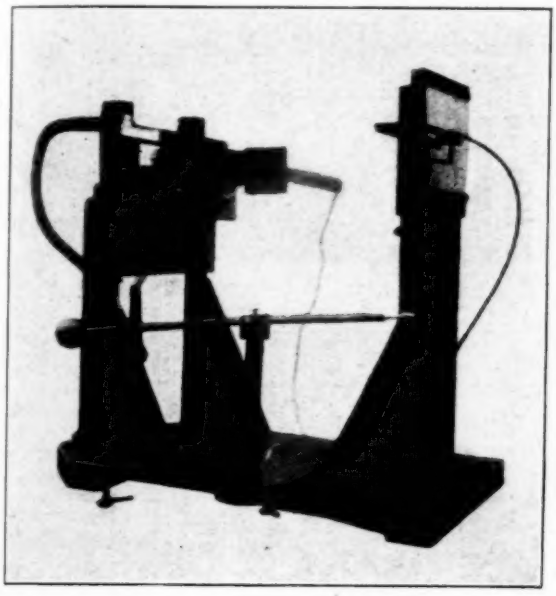
The path taken by the false image is followed by a ring, operated by the patient, whose endeavour must be to keep the luminous spot moving on the black screen within the ring throughout the whole of the cycle of movement. In practice it is the better method to allow several complete cycles to take place before the graphing apparatus is brought into use. When the patient says that he or she is able to follow the moving light and to keep it fairly within the ring throughout the track made by the light, then a lever is pressed and the pen attached to the graphing position of the instrument comes into contact with a card upon which a large number of squared lines are printed, each is approximately 2 mm., and a stronger-line square contains twenty-five of the smaller squares and therefore is 1 cm. square. Each square of 2 mm. represents approximately $\frac{1}{2}^{\Delta}$. There are also a horizontal centre and a vertical centre provided by yet stronger lines. When contact is made between the pen and the graphing card the movements made by the "chasing" of the light with the ring along its paths are shown by the marks made on the squared card.

Each eye is tested separately and gives clear and distinct muscular power and balances. The Myophoriagraph is the first device for taking the Phorias and optical centres Monocularly, giving Binocular conditions at the same time. This is so, because when the left eye is looking through the rotating prism into the mirror which "reflects" the spot of light, a mental process occurs and it is the right eye which sees the path taken on the screen and the right eye which guides the hand to keep the spot within the ring at all points of the journey round. When testing the right eye we thus find the corresponding point of the left and vice versa, so that we can by these means find the true extent of Binocular balance with and without corrections being worn. We can also take a graph of the co-related points of both eyes, and show the defects of accommodation and convergence and the weakness of the supplementary acts in such a manner that records can be kept in order to note progressive stages in the building-up of corrections which combine accuracy with comfort.

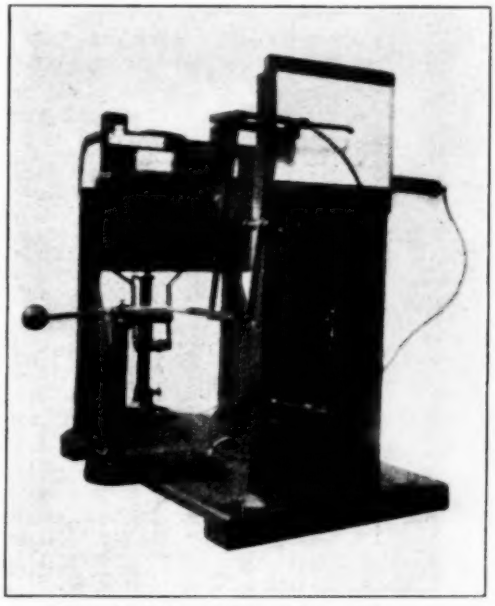
The instrument has proved that the eyes have a common receptive area in the brain, a big stride forward in the study of Ametropia. Also it is no misnomer to speak of the "projective" power of the eye, for if the right eye is stimulated by what can only be seen by the left eye, then some system of projection must take place, and it is

quite in order to assume that the common brain area of vision is in the nature of a mirror.

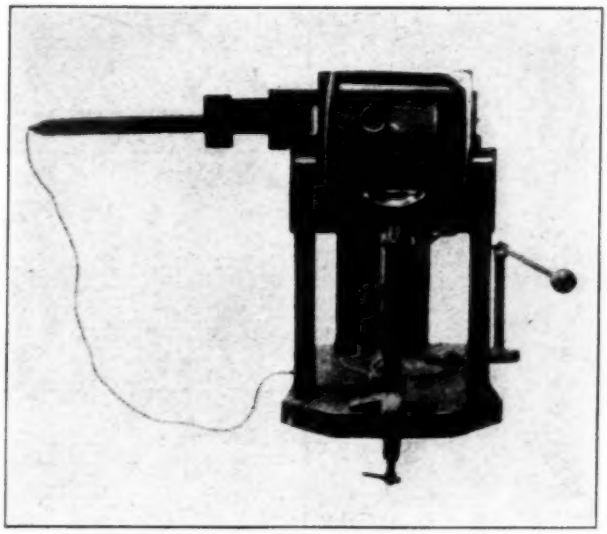
Now what is shown on the Myophoriagraph and how the result is read and calculated I will show by giving an instance. First of a case of a —2.00 Sphere Myope: with 10Δ of Exophoria. has dispersed 6Δ to 7Δ of Exophoria, leaving only 3 or 4 degrees. We argue from this that the —2.00 lenses stimulated accommodation to the extent shown, and this act automatically stimulated convergence, proving the association and demonstrating how necessary it is to create and maintain



Side View



Back View Showing Chart in Position

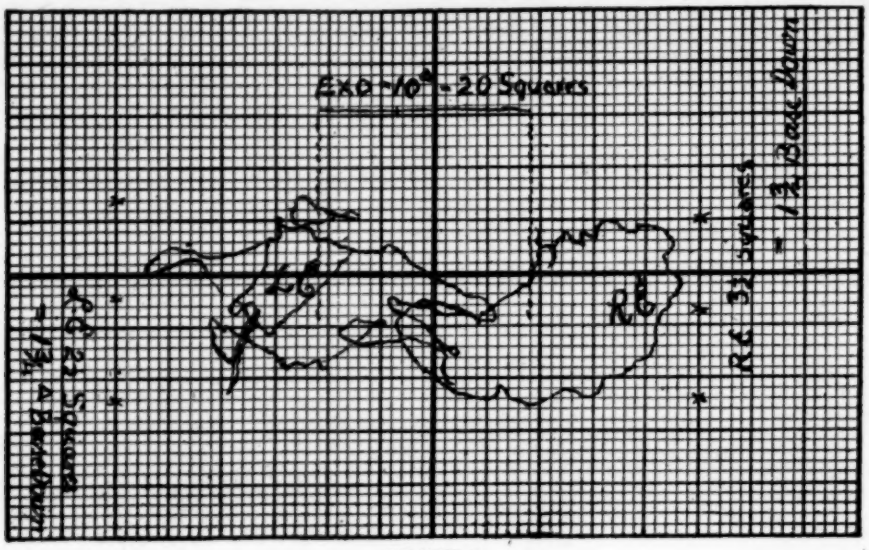


Front View

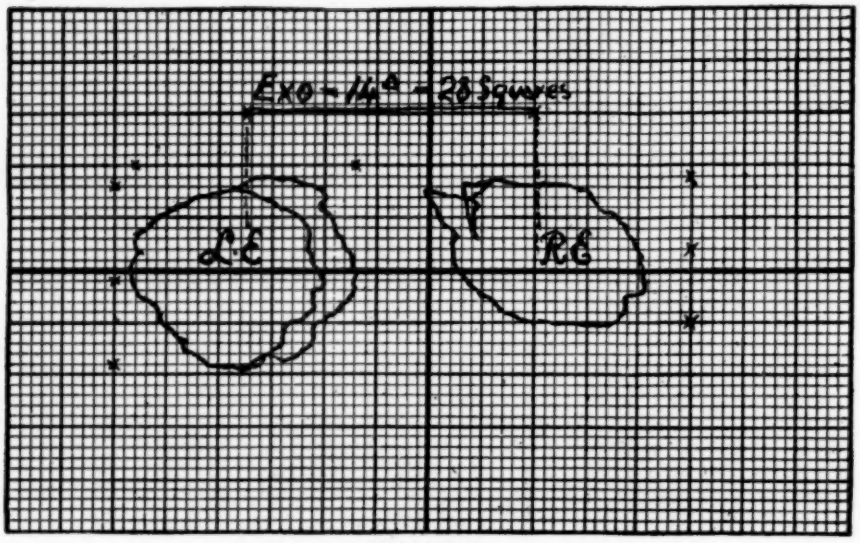
From the REFRACTIONIST

A graph without correction demonstrated the amount of Exophoria to be as stated, 10Δ, but when the correction (—2.00) Sph. is worn and another graph is taken it is seen that the —2.00 balance between the two in order to give the Supplementary acts a chance to operate.

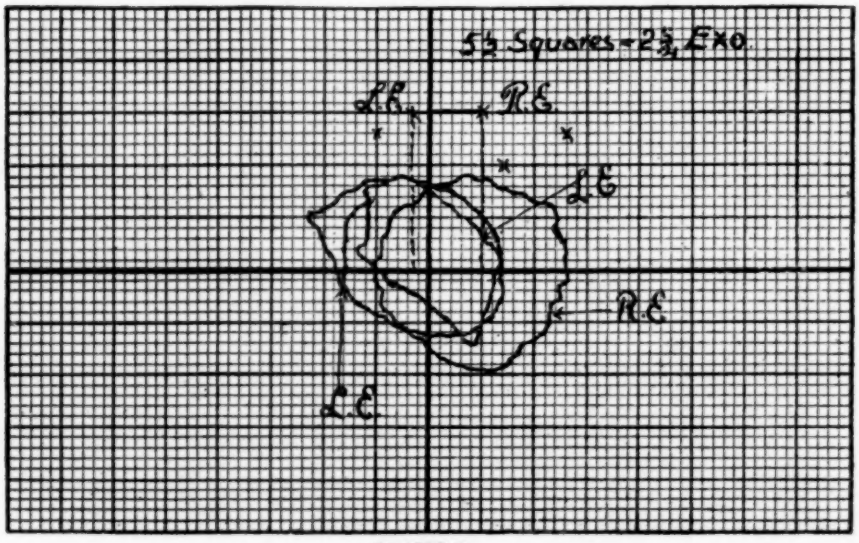
We have also established the three to one basis (three degrees of conver-



GRAPH 1.



GRAPH 2.



GRAPH 3.

gence to one degree of accommodation) necessary to give the right results. In Esophoria the tests are simply reversed and the results in inverse ratio.

The foregoing is, of course, simple everyday practice, but there is a still greater field of usefulness for the Myophoriagraph. The instrument is going to prove invaluable in the research on Nystagmus. There are several forms of this eye trouble, but the effects of each are very similar. If we take the very simplest way to explain the muscle system of the eye and suppose it to consist of a ball and socket arrangement with four points of suspension or muscle powers taking care of the four cardinal positions, we can readily estimate what the effect would be of intermittent enervation and innervation of each of these four points of muscle powers in turn. The effect would be an eccentric circular movement entirely beyond control, and at varying speeds causing acute distress. The eyes are being pushed or pulled this way and that way as the various muscle and nerve forces are exerted and opposed. The Nystagmus case holds the head high, can we assume that this indicates that he is subconscious of the fact that the superior muscles being extended exert some control over the others? I think we can assume so far, and the outcome of this assumption is that we have to help the other muscles in the effort to find a balance.

I have with me a graph of one of these cases. May I say that I cannot yet lay down any hard and fast routine, nor do I claim to have reached a conclusion. In submitting these results to you, however, I do say, that they indicate that research is being conducted along lines calculated to add greatly to our knowledge and at the present stage gives promise of success in dealing with Nystagmus.

The first graph was taken on May 19th of this year and was a weird result, as you can see. I deduced from this graph that the right eye was the dominant eye and that the Nystagmus affected that eye very little. That the inferior rectus of the right eye was much stronger than the superior and it appeared to me that the strongest muscle was his superior oblique. His chief trouble lay in the left eye, and I considered that I had a perfect graph of the spasmodic movements of the left eye. The first thing I did was to test refraction, and the vision recorded was 6x for both eyes. At a distance of 3 metres there was 2$^{\Delta}$ of Esophoria, and at 33 cm. 8$^{\Delta}$ Exophoria was shown. The refraction with retinoscope dynamically showed, right eye —1.5 sph. and left eye —1.75 sph. Binocularly another —2.25 was added. When we attempted to produce Binocular fusion an excess of 10$^{\Delta}$ was shown to be needed to balance the refraction. This could not, of course, be considered for a moment, and there is no doubt it was spurious; but it did indicate to me that base in was wanted. The prescription given was —1.5 sphere right eye, —1.75 left eye, combined in both eyes with 1$^{\Delta}$ base in, because, even with minus up, we still had an Esophoric condition at 3 metres. By adding 1$^{\Delta}$ in each eye, and so repressing convergence, it produced orthophoria, and gave him greater comfort. This left him at near point with Exophoria of 10$^{\Delta}$. His vision was still 6x but he was able to read.

We saw this case again on the 18th of July, and Phorias at distance and near without glasses were very similar. We now found with the Retinoscope that there was no movement, and we gave him right and left —2.0 sphere, still incorporating our 1$^{\Delta}$ base in for each eye, but we added 3$^{\Delta}$ base down right and left to throw his centres up. Although we had monocularly in each eye 6x, we were able to get Binocularly 3/60 vision—a decided improvement. The graph taken on the second occasion shows the progress made in dealing with Nystagmus, but we still had Exophoria of 14$^{\Delta}$. By adding the 3$^{\Delta}$ base down, we reduced Exophoria to 2¾$^{\Delta}$ in a month.

The third visit at another month's interval showed that the eye required another —0.50 sph. and further help could be given with his reading by the addition of +0.75 sphere. The final graph of the series shows how Binocular fusion had been attained and the patient was very greatly averse to anything further being done.*

* Read before the Hants, Wilts. and Dorset Local Association. From the Refractionist, London.

THE GENERAL MANAGEMENT OF DIFFICULT CASES OF OCULAR IMBALANCE*

J. I. Kurtz, B. S., A. O., F. A. A. O.

Minneapolis, Minn.

In this paper I am taking it for granted that my readers are familiar with the technic of the different methods of muscle testing. So much has been written on this subject in the magazines and books, that I feel that there is no particular need for me to review the subject which can easily be read up on, if one so desires. I will confine myself to some practical points in the management of difficult muscular cases, as I have worked them out in my practice, very little of which is to be found in text books or periodicals.

1. Selecting of Cases for Treatment

The first and most important part about muscular treatments is the selection of cases. While I am somewhat of a radical on this point, by that I mean that a much greater percentage of muscular imbalance and of a much higher degree than has been claimed by authorities in the past, will yield to oculo-prism treatments. For instance, Dr. Savage claims that "in high degrees of intrinsic exophoria, non-operative measures will be productive of but little and that will be slow of accomplishment. Exophoria in the distance of 4° or more and an exophoria in the near equal to the angle of convergence at that point, gives but little promise of yielding to non-operative means. An exophoria that gives diplopia in the distance under the red glass test, is practically always a case for surgical treatment." Yet, any optometrists using modern methods in administering oculo-prism treatments, finds that muscular imbalance of the degree mentioned by Dr. Savage and even of a much greater degree, yield to the proper non-operative treatment. I have found this repeatedly to be a fact. The following case may illustrate this point: "Miss E., age 13, high school student, was examined on Sept. 15th, 1924. Her refractive error was, O. D. —1.00; D. Sph. ⊃ —1.00; D. Cyl. Axis 25. O. S. —1.50; D. Sph. ⊃ —1.50; D. Cyl. Axis 160. She slowed 22Δ exophoria at distance and 38Δ exophoria at near. The red glass test produced diplopia and it required 14Δ base in, to establish binocular vision. After 104 treatments the exophoria at the distance and near completely disappeared and an adduction of 60 P. D. had been built up. This took just one year. She has since been re-examined in Dec., 1925, and showed perfect orthophoria at distance and near and still maintains the same degree of adduction." I have several similar cases on record. It is cases like these that make me a radical with respect to muscular treatment. It is my firm conviction that any case of muscular imbalance, comes within the scope of the optometrist, and should not be turned away as hopeless, because we were taught in our colleges at some early date that such cases are incurable by non-operative measures. WE CAN NEVER HOPE TO GET RESULTS UNLESS WE TRY. And try not only for a few treatments but for a good long time. Here, again, I disagree with Dr. Savage, he claims that all cases, not showing a good result from treatment after a reasonable time, should be operated upon. I have found, some cases which will show no improvement at all under oculo-prism treatment, for a long time and when improvement once does show it comes rapidly. In selecting your cases for treatment, you always want to make certain that there are no ocular pathological conditions and focal infections. It is not advisable to start treatments on patients who are extremely aneamic, unless you work in co-operation with your patient's physician.

The question is often asked—what type of muscular cases yield to oculo-prism treatments? Here, again, we will find a great divergence of opinion. Some authorities claim that only cases of exophoria and weak adduction, will yield and that no treatments for exophoria where the ductions are normal, should be undertaken. My answer to this is that all forms of muscular imbalance will benefit from oculo-prism treatments to some degree (with the

exception of a few which may be the result of some pathologic systemic disturbance). The degree of improvement will be in proportion to the amount of time and effort put in by the refractionist and the patient. The confidence and co-operation of the latter is a very important and determinating factor.

2. Prognosis

After you have selected the case for treatment you will find that your consultant will be anxious from the very beginning about the results he can expect and may want you to guarantee the results. Here is where you want to be very careful. I do not promise anything other than that I will do all that is possible to help. I do not promise that the results of the treatments will never prove fatal as is sometimes the case in surgery. Always tell the consultant that in order to get the best results it is highly important that you have his co-operation and that your instructions MUST be followed out. Make it plain that you will discontinue treatments as soon as you note a lack of co-operation or any signs of indifference on the part of the consultant. Be frank. If after treating the case for a certain length of time, there is absolutely no chance of getting any improvement, tell that to the client. He will respect you for your honesty and sincerity. However, do not be too much in a hurry to take this step. Take plenty of time before you decide to give up. You owe this to your consultant as well as to yourself. In case of this kind make a fair charge for your time and material used and most people, you will find, are reasonable and are willing to pay you well for your trouble.

3. The Results from Treatments

I have received any number of letters from optometrists, interested in treatments of ocular imbalance, asking this question—what is the percentage of treatment cases in which you get satisfactory results? I find the results to be satisfactory in from 50 to 75% of the cases. However, the figures will be somewhat modified according to what results one considers satisfactory. Personally, I divide the cases in three classes:

1. A class of cases in which the results are satisfactory to the operator and not to the consultant.
2. Cases where the results are satisfactory to the consultant and not to the operator.
3. Cases in which results are satisfactory both to the consultant and to the operator.

New let us analyze a little, these three classes of cases. In the first class, I placed the cases which show good results after being treated for some time. This is a marked exophoria has considerably diminished or entirely disappeared; the adduction may have been built up from a very low to a high degree. You can turn to your treatment record and note a gradual and constant improvement from day to day. You are satisfied that you have accomplished what you set out to do—this was to remove the abnormality. Yet, your consultant may still complain about having the same troublesome symptoms after the treatments as he did before. He certainly is not satisfied with the results, even though you may be satisfied from what your record shows. The explanation that can be given is that there may be some other sources of trouble other than ocular which make the consultant feel uncomfortable. For your own good, it is therefore advisable that when you accept one of those difficult cases for treatment to make this statement—that you do all that you can to remove the ocular abnormality and that he should be relieved of his symptoms if there is nothing else the matter with him.

In the second class, I said the results may be satisfactory from the patient's standpoint and not from the consultant's. This would be just the opposite of the condition outlined just before. Your consultant may be noticing a gradual improvement and even be completely relieved of the symptoms and yet your treatment record will show little or no improvement. This case will illustrate the point. Mrs. E., age 36, called for an examination, March 3, 1925. She complained of frontal, temporal and occipital headaches. Was getting dizzy spells and at times would collapse as a result of these spells. Was very nervous and irritable. She was under medical care for some time without getting any relief. Examination revealed a small amount of hyperopia in both eyes. Had 4Δ exophoria at

distance and 10Δ at near. Very low duction power varying from 4 P. D. to 8 P. D. Positive reserve convergence was also very low. After treating this case for two months, the patient claimed to note some improvement and at the end of five months the patient claimed to be relieved of all the symptoms she complained of at first. The adduction at this time was only 16 P. D. and could not be raised any higher and the positive reserve convergence was only 14 P. D. To be sure, these results, as far as my record would show, are far from satisfactory. Yet the patient is completely relieved from all her former troubles. You may ask how you account for these results. It may be difficult to give a satisfactory explanation from the technical optometric standpoint but an explanation may be had if we look at these cases from a psychological standpoint. Dr. Boris Sidis of Harvard University, claims that each of us possess a stored-up fund of energy of which we do not ordinarily make use but which we could be trained to use habitually to our great advantage. Dr. Sidis claims that it is by arousing this potential energy that the patient gets relief. The "reserve energy supply" is my reply, to your question. And right here I want to emphasize the importance of the knowledge and application of psychology in our every day practice. Psychology properly applied will sometimes bring better results than any method of treatments in existence to date. Coming back again to the second class of cases I want to leave this thought with you. If your patient tells you that he notices considerable improvement even if you do not, find any change in the condition, do not argue this point. Just carry on your work as before and let your consultant continue to feel still greater improvement as he most likely will, because you must have tapped one of the sources of "reserve energy." The third class of cases where both the consultant and the operator note that results are satisfactory need no further comment other than to state that these cases are the ideal ones and the more you get of them the more certain you may be that you are on the road to success.

4. Holding the Case During a Long Period of Treatment

Anyone practicing extensively on the treatment of muscular imbalance knows that for some of the difficult and stubborn cases it takes long times to get satisfactory results. People as a rule are impatient and in a hurry these days and some will discontinue coming for treatment after a short period of time if some results are not noticed. How to hold these patients to the last is a question many refractionists are confronted with. This problem works out somewhat different with the dentist or the surgeon. If the dentist once pulls out the tooth his patient must continue coming around until the bridge work or the new set of teeth are completed. If the surgeon once performed an operation the patient must stick it out during the period of convalescence regardless of whether the operation proves to be a successful one or not. In our case some of the patients who take a notion to quit, think it a good stopping place at the end of any particular treatment. These suggestions may help you to keep some of your cases to the last, I know they worked in the most of my cases. (a) Keep your consultant informed as to what you are doing, what you try to accomplish and keep him informed of any improvement you may notice. (b) Create in him a desire to accomplish the things he cannot do now. (c) Keep him interested in the work. It becomes monotonous for a person to have to do the same thing over and over again every day in the very same way. You cannot expect to hold a case for any length of time by merely turning the rotary prism before his eyes for five minutes and let him go. Develop your individual technic and vary it from time to time.

5. Keeping a Case Record

It is very important that a complete record of your treatments be kept and everything you do or any change that you may note in any of the functions during the treatment be entered on the record. I do not know of an entirely satisfactory treatment record card for sale at the present time. I am using one which I made up for my individual use.

The record is made up of a standard size sheet 8½ by 11 inches. There is a space provided at the top for the name, address and case number. The main body of the record is divided into

three divisions. The first and last divisions are used for recording consecutively the findings "before treatment" and "after treatment." Under the main heading "before treatment" are to be found the subheads of tunicity, ductions and fusion faculty. Under "tunicity" space is provided to record the findings of the distance and near muscle tests. Under "duction" space is provided to record the amount of prism base in, out, up, or down the muscles can overcome. Under "fusion faculty" space is provided for recording the treatment given with the amblyoscope, stereoscope and the positive and negative reserve convergence. The same subheads appear under the main heading of "after treatments."

The middle division is devoted to the treatment technic. Under this head space is provided to note the type of treatment used, whether pull, shock, modified shock or retaining treatment.

One line across the page is used for each treatment and from 30 to 35 treatments can be recorded on each record. The reverse side of the record is left blank. This provides ample space for special notations during the treatment period.

Before closing I wish to touch briefly upon these two last points:

1. How to secure these difficult cases, and
2. The fee for your service and how to get it.

I consider these two points as important as any, because you certainly cannot treat nor practice any of your methods or technic unless you have some cases to be treated and if you do get such cases it is very important that you get a fair fee for your services.

I have talked and corresponded with many optometrists and a frequent question asked is, "How do you get those cases which pay high fees? We do not seem to get any of them." My answer is that it is not a matter of not getting these cases. It is a matter of not knowing them when you do get them. The other day an optometrist from Wisconsin was in my office and while talking on this subject he made the remark that during the 20 years he has been in practice he never had a case that payed him $100 to $200 for services. I challenged his statement. How do you know he retorted? And I proved to him by his own statements. I merely wanted him to answer these questions—did you ever have a case of squint—or a very high degree of esophoria or exophoria, something like 20Δ to 30Δ? Any number of them was the reply. Did you suggest doing anything for them besides fitting them with a pair of glasses? No. Then you have had all of these cases which pay high fees and did not recognize them. You simply let them go to some other place where they were rendered services and charged accordingly. When a case of the kind just mentioned comes into your office it is up to you to prescribe for them the full services which they need. Offer none but the best and charge all it is worth.

In determining the fee to be charged several factors are to be taken into consideration: (1) the type of a case you have in hand (2) what you contemplate to do (3) the consultant's ability (4) the value you place upon yourself and your services, (5) and whatever you think your service is worth ask for it. There is not a surgeon living that was ever paid $500 or $1,000 for an operation unless he asked for it. I will grant you that the case is somewhat different in optometry. The public has not as yet been educated to the same extent and it is not the public's fault but the optometrists'. I find that people will be willing to pay a fair fee to an optometrist just the same as they do to the dentist and the surgeon. I also find from experience that I get a great deal more co-operation from a case which pays me a $300 fee than from one which pays only a $25 or a $50 fee because that one that pays $300 has a financial interest in the proposition of from 3 to 6 times as great as the case that pays the smaller fee. In considering the fee the several factors mentioned should be taken into consideration, the value a person puts on his own service is of utmost importance. This reminds me of the story about the man who bought a high priced car. After driving it around for a few days he happened to drive up on a steep sandy hill. His car got stuck and he simply could not make the top. After a number of unsuccessful attempts he had to back down and drive along a different road. He took the car back to the place where he purchased it and complained that he could not make the hill and

the salesman told him that this was the best car on the market and that surely something must be wrong with the road and not with the car. The car has been paid for and he had no recourse. He decided to trade that car in but before doing this thought he would take the car up to a high class garage man and see what he can find out about it. The garage man looked the car over, let the engine run, then picked up his hammer and tried to tap the carburetors. No, said the man, you are not going to tap the carburetors with this hammer. If I am to fix this car I will have to do what I think should be done, the garage man answered. He tapped the carburetors and asked the owner to get in and drive the car around. He surely made that hill this time and without any difficulty. When he came back to the garage he exclaimed she surely worked fine now. How much do I owe you for tapping the carburetors? $1.00 replied the garage man. Fine. This is surely reasonable. Thanks and he handed him the dollar. Just a minute said the garage man, I am charging you $49.00 for knowing where to tap with the hammer. He was and is considered the best and most successful garage man in his city. Why? Because he charged for what he knew and not for what he had done. If we as optometrists are to be successful, we will have to charge for what we know, our service if you please, and no one knows more as to what your service is worth than you do yourself.

*Paper read before the St. Paul Society of Optometry.

PERIMETRY AND CAMPIMETRY*

Max Poser, Rochester, N. Y.

Visual Field Tests

To test the visual field of a human eye demands central fixation and which must be secured in order to arrive at correct results.

Consider for a moment that a screen in hemisphere form would be placed in front of the patient's eye while the other eye is closed, and the hemisphere so arranged that the pupil of the patient's eye is in the exact center of the hemisphere, so that the summit and all other points on the hemisphere are at equal distances from the pupil, the patient, when fixing for a point on the hemisphere representing the summit, will observe an object reflecting light different in color or intensity from that of the hemisphere screen itself, and thus the object forming a contrast with the background when placed anywhere within the hemisphere will be perceived within an angle of about 60 degrees nasal, 102 degrees temporal, while the visual field above the horizontal meridian is about 50 degrees, and below the horizontal meridian 70 degrees, provided that the eye is what we might call normal. The object moved within the hemisphere, we will call the test object, and which of course could only be seen clearly defined when in the center of the visual field.

In all other positions within the visual field indicated above the test object will be merely perceived. Should the test object not be seen or perceived anywhere within the limits of the visual field mentioned above, the areas where the test object is not perceived are to be outlined and marked on the test screen and thus we may roughly picture the method of outlining a visual field. From this it will be apparent that if the visual center of the patient's eye is not precisely fixed on the point of the summit or center of the screen, inaccuracy of the test will be the consequence. To fix the one eye only on a single point precisely, however, is not possible owing to the involuntary movement of a single eye, but fortunately such inaccuracies in the outlining of the outer visual field are not of great consequences, and instruments like the perimeter and campimeter with monocular fixation, furnish useful data for the outer portion of the visual field. The results obtained with these instru-

ments with monocular fixation, however, are not sufficiently accurate for precise testing of the central and paracentral visual field, particularly in cases where a blind area, called scotoma, of small dimensions is to be ascertained, and in precise outlining of the Mariotte blind spot.

It is well known to those who have made visual field tests for central and para-central scotoma a specialty, that the visual acuity is greatly impaired even by a very small scotoma of one-half a degree or less, if such a scotoma occupies a position quite near or in the center of the visual field, it is not a rare occurrence that in such cases the visual acuity is reduced to 20-200ths and less.

Instruments designed for monocular fixation are, therefore, unsuitable for accurate tests of the central and paracentral visual field which the profession in general fully realized, and an instrument of greater precision was demanded. In order to meet this long felt demand, I designed the Stereo Campimeter and which we made part of our regular manufacture. We named the instrument Stereo Campimeter, since it is specially designed for binocular fixation.

By this method we can arrest or fix precisely the eyes of the patient, provided stereoscopic fusion is possible. The entire procedure is very simple since one has only to fix the eyes upon the centers of the test chart figures consisting of two identical figures, like pictures or charts used with a stereoscope, so that both figures are fused in one. With the Stereo Campimeter both eyes, being fixed by means of the fusion center, are kept in check, so that when one eye is tested for scotomata, the other eye will keep the one tested in correct position since one cannot move one eye by itself. On account of this principle any blind area on the retina or visual pathway within the field of the instrument can be outlined with the greatest precision and to prove this fact, it is suggested that the operator outlines his own Mariotte blind spot of either eye, which in reality is a virtual scotoma. When making this test all the operator needs to observe is the point on chart or slate where the test object ceases to be seen, and which point is to be marked with a chalk pencil on chart or slate, then likewise mark the point where the test object begins to be perceived again. Repeat this test over the same area several times and observe the markings made for each test when it will be found, that the indicated chalk marks on the chart or slate do not differ, and thus the accuracy of the outlining of a scotoma is proven.

Construction of Instrument

The Stereo Campimeter primarily designed for the purpose of ascertaining and outlining central and paracentral scotoma with binocular fixation consists of an oblong metal base of special construction onto which is mounted the adjustable carrier of object stage and viewing device, so that the object stage with viewing device together may be inclined and raised or lowered in height in order to suit the convenience of the patient.

The stage itself consists of a solid metal frame with large oblong aperture covered with a ground glass plate which permits the use of charts, either opaque or transparent, with the Stereo Campimeter after having removed the campimeter slate.

Two metal bars are provided for in order to hold such test charts firmly on the stage. These metal bars extend over the entire stage laterally and are provided with spring clips so that the metal bars may be moved across the stage in a vertical direction, thus providing a very convenient means of holding test charts of different sizes firmly on the stage. The stage itself is adjustable so that the distance of viewing lenses from stage may be varied. The correct position of the stage from the viewing lenses with emmetropes is 190 mm., and which should be carefully observed. With ametropic patients, not fully corrected, the stage may be raised or lowered from the 190 mm. positions, in order to focus the markings on slate, but in such cases the small squares on slate do not represent exactly 1 degree in diameter. In order to carry out adjustments conveniently, the sliding rod of stage is provided with a scale. With the stage at 190 mm. from the viewing lenses, the slate is in the precise focal plane of the viewing lenses and thus the exit pencil of rays is rendered parallel; the eyes of the patient are therefore view-

ing the campimeter slate as if it was situated at infinity.

Owing to the large aperture viewing lenses, the arrangement makes the instrument independent from the interpupillary adjustment, and thus the work is greatly facilitated.

The test figures on the campimeter slate originally consisted of the Haitz chart combined with the Bissell blind spot chart, but since the instrument furnishes a considerable larger field than demanded by either of these two charts, Dr. Ralph I. Lloyd suggested the stereo campimeter slate which is mounted on a special metal plate so that same can be readily attached and detached to the stage of the Stereo Campimeter. The central part of the test figure on this Stereo Campimeter slate represents the original Haitz chart, the boundary of which is marked by an octagonal figure in double lines; beyond this, the area extending in the lateral direction up to 25 degrees, 10 degrees in the vertical direction above and below the horizontal meridian line, and 10 degrees nasal, represents the Bissell blind spot chart. Same is also marked in small squares each measuring 1 degree, and in order to facilitate counting of these 1 degree squares, every fifth degree is outlined by a heavy boundary line.

The Mariotte blind spot of an average normal eye is indicated on the campimeter slate by an oval figure marked in dotted lines. The position of the normal blind spot area thus indicated was suggested by Dr. Harry Gradle. The remainder of the campimeter slate is also marked in degrees, and laid out on a tangent scale as suggested by Dr. Ralph I. Lloyd. With this campimeter slate, the field extends from the center, temporal to 35 degrees, in the vertical meridian to 25 degrees and nasal 10 degrees. It was a very happy thought of Dr. Ralph I. Lloyd to combine all these useful charts into one, which greatly simplifies matters.

The actual field possible with the Stereo Campimeter, however, extend even beyond and below, namely, 30 degrees above and below the horizontal meridian and 45 degrees externally.

The central ring system of the test figures provided with the campimeter slate was also suggested by Dr. Ralph I. Lloyd in order to furnish a negative fixation center.

This negative fixation center is of great value in all cases where good central vision of the patient is present, but in cases where the patient lacks central vision in the one or the other eye, or in both, the octagonal figures on test chart may serve the purpose of ascertaining fusion. The large round dot surrounded by a ring at each of the four corners of the 10 degree field seen when the test figures are properly fused, also serve as indication marks for proper fusion in such cases where central vision of the patient is lacking. The entire chart is of a dull finish in order to prevent glare. Reflections of any kind from the campimeter slate or test object are detrimental to a careful test of the visual field.

The viewing lens system consists of two specially corrected lenses, each combined with a prism of three degrees. The mounting of these lens systems is so arranged that lens and prism together can be rotated around the optical axis of the lens. To facilitate the rotating of each viewing lens system separately, a specially designed rotary movement with milled head has been provided for. By turning the milled head on either side of viewing lenses, the lens system may be rotated individually around its optical axis. The prism action in the vertical meridian caused when rotating the prism lens system can be read on a scale graduated in ½ degree diopters, and serves the purpose of adjusting the instrument for a patient with hyperphoria.

The entire range for correcting hyperphoria with the viewing lens system is 4 degrees diopters.

Besides the above mentioned prism diopter scales, two millimeter scales with index are provided for, so that the optical centers of each lens can be set to coincide with the center of test figure on slate or chart. The correct position of each viewing lens, when used with campimeter slate is ascertained by setting the index point opposite figure 40 on each scale, which means that the centers of both lens systems are to be 80 mm. apart and thus coincide with the centers of the two test figures on campimeter scale.

A light excluding screen is fitted over the entire viewing lens system in

order to prevent stray light and corneal reflexes.

In front of the viewing lens system, metal grooves are provided for, so that prisms of various powers can be added to each lens system. The prisms may be inserted in the metal grooves with base out or base in as the case may demand in order to bring about good fusion of the patient, and to facilitate this adjustment, the prisms are furnished in square form, specially ground to fit in the above mentioned dove-tailed metal grooves.

The following range of prisms may be furnished: 2.5 degree diopter, 3 degree diopter, 4 degree diopter, 5 degree diopter, 6 degree diopter, 7 degree diopter, 10 degree diopter and 15 degree diopter.

With most patients the use of prisms is necessary in order to ascertain perfect fusion.

We often experience in the macular area diseases or inactive conditions, and it is of the greatest importance to determine such cases with precision, since they affect invariably the vision of the patient to a large extent, and in order to insure success in the outlining of central and para-central scotomata, correct binocular fixation becomes a necessity.

To control proper fusion of a patient, Dr. David W. Wells designed a very useful chart to be used with the Stereo Campimeter, and which we will discuss briefly.

The Wells' Chart

The Wells' chart consists of a horizontal black scale and a vertical red scale divided into one centimeter intervals. In the horizontal scale, the intervals are numbered from 2 to 9 which means that the respective scale divisions are from 2 to 9 centimeters distant from the vertical red scale. The intervals of the vertical red scale are provided with alphabetical letters instead of numbers, so that the interval marked G represents the center of the red vertical scale, and if the patient has proper fusion, the Wells' chart, resting on campimeter slate between the vertical lines on slate indicating 15 degrees from the center, when viewed through the Stereo Campimeter by the patient, should appear as if the red scale were passing through the black scale at figure 8, and the small horizontal line indicating interval G on red vertical scale should appear right on the black scale at figure 8.

In cases where the patient does not observe the above mentioned condition, and the red vertical scale for instance crosses the black scale at figure 6, this would indicate that 10 degrees diopter are required with base out in order to bring about proper fusion, and it is suggested to insert a prism of 5 degrees diopter for each lens and try again. Should still more prism be required in order to bring about perfect fusion, insert prisms of higher value until proper fusion is accomplished.

If, on the other hand, the patient should see the red vertical scale to pass through the black scale between 8 and 9, less prism is required, and in which case the prisms are to be inserted in the dove-tailed metal groove with base in. One degree diopter will produce 2 mm. decentration, but as the patient's convergence is not constant, several trials will be necesary to secure the best correction. Having made the lateral adjustment, it should be ascertained whether the division line marked G on red vertical scale appears on the black scale under figure 8, if not, there is present hyperphoria which should be corrected by turning the milled head on viewing lens system, and thus rotating either the one or the other optical member, or both, as the case may be, until the short division line of red scale marked G appears on the black scale under figure 8.

When making the adjustment mentioned above great care should always be taken that a patient, not being emmetropic, is using his distance correction, and in cases where bifocals are worn, it may be advisable to change these for ordinary lenses with distance correction only.

The test objects used with the Stereo Campimeter vary in size from ½ degree to 5 degrees, and are furnished in white, green, red and blue color of special selected hue acknowledged as standard colors.

It is also important that the color of these test objects are free from gloss and protected so that when the test object is drawn across the slate surface, the colors are not injured. To accomplish this, the disc of the test object is made of hard rubber with the

margin slightly protruding so that the color disc mounted to this hard rubber disc is well protected, and the edges of the hard rubber disc, when sliding along the campimeter slate will not get shiny, thus preventing light reflexes detrimental to the accuracy of the test. For convenience these rubber discs are mounted one at each end of a thin black wire, and in the middle of the wire, a flat handle plate is provided for, thus enabling the operator to hold firmly, and conveniently direct the test object anywhere across the campimeter slate and to change quickly from one color to the other.

To protect the color of the test objects when not in use, a case with fittings for the test objects is furnished with each instrument.

Application of Instrument

To proceed with the test, the Wells' chart is now removed from the campimeter slate and the 1 degree test object of white color selected.

Before placing the test object on the slate, the operator is to ask the patient to observe the two rings in the center of each field of the test chart, and which, with proper fusion, will be observed with the patient as two distinct rings, the smaller one, however, appearing at some distance from the larger one, so that the effect of looking into a tube is produced.

This effect has been brought about by arranging the smaller ring on campimeter slate slightly out of center of the larger ring, so that when both fields are fused the smaller rings, owing to the stereoscopic parallax thus produced, appear fused, but at a further distance from the plane occupied by the fused large rings, and a negative fixation center is created which in turn ensues perfect arresting or fixing of each eye.

The patient is now asked to maintain the visual impression made by these rings, and which will secure perfect fixation of either eye, so that when the one eye is tested for scotoma, the other eye will keep the eye under test in check.

This is explained by the well known fact that one cannot move one eye by itself; the moment the patient endeavors to look away from the ring system serving as a negative fixation center, the depth perception, or the effect of the apparent different distances of the two rings, will be lost, and from which we see that the negative fixation center serves as a severe test object for correct fixation. Having secured perfect fixation of the patient, the outlining of the visual field may be proceeded with, using the above mentioned white test object of 1 degree.

In order to acquaint the patient with the effect of a scotoma when making the test, it is advisable to pass the test object several times over the Mariotte blind spot area indicated on the Stereo Campimeter slate with an oval dotted line for either eye. The patient thus becomes acquainted with the effect created by the test object when passing into a blind area and out again, causing the apparent disappearing and reappearing of the test object to the patient's view.

This experiment will require only a minute or so, and the proper test for outlining the visual field can now be proceeded with.

It is suggested to pass the test object from the center of the field towards the margin in the various directions, and then make the reverse movement of the test object, namely, from the margin to center of the field. This method will show at a glance the so-called doubtful zone, and to which we will refer later.

Throughout the visual field test, the patient is cautioned not to fix his eyes on any other point on the chart than the two center rings and to report promptly when the test object disappears and reappears to his view. The operator instantly marks the spot where the moving test object disappeared and where it reappeared to the patient's view, with a white chalk pencil, thus indicating a blind area between these two points, and in order to outline this blind area in its true form or shape, the test object is now moved from different positions across the space marked by the two dots mentioned above, and each spot where the test object disappeared and reappeared to the patient's view is to be indicated on the slate with a white dot. The white dots are now joined together, and thus the area where the test object was not apparent to the patient's vision outlined and which, when the test was made with a white test object, we call a total scotoma.

For every precise outlining of a scotoma, also for determining small visual defects or lesions in the center of the visual field, the test object of ½ degree is to be recommended.

Amblyopic patients may require test objects of larger size than 1 degree, and it is for the operator to select the most suitable size required for each individual case.

The application of the Stereo Campimeter is not necessarily confined to patients with binocular vision.

As Dr. Ralph I. Lloyd has pointed out, there are many cases with one macular area diseased or inactive, and these are just the cases we are called upon most frequently to investigate. With the macular area diseased or inactive, fusion and fixation are bound to suffer and which renders the test more or less inaccurate since an eye, which cannot fix well, will wander causing the record made under such condition to be defective and unreliable, hence the many failures experienced with the perimeter as a monocular fixation instrument; on the other hand matters can be greatly improved with the aid of the Stereo Campimeter even when used for monocular fixation, provided that at least one eye of the patient sees the fixation center properly.

Frequently, we meet cases where the patient has never used both eyes at once without being aware of it. In such cases, the patient should fix with the best eye and the examination may then proceed. In some cases, the deviating eye may be brought in line by means of a prism, but the more simple way in focusing with the good eye is best because in too many of these deviating cases, the patient has yet to learn what fusion is.

The Stereo Campimeter may be used for determining the position of the deviating eye in Strabismus, and is more accurate than the use of the perimeter and flash light for this purpose. With the Stereo Campimeter it is suggested to map out the blind spot of each eye and the field for red with ½ degree test object with both eyes in use; the fixing eye is now covered and the patient fixes with the deviating eye, the octagonal figure aiding greatly to concentrate the effect upon the central point even when the vision is very poor. The blind spot of this eye is now again mapped out and the difference in degrees of location of the blind spot found to exist between record one and record two is the amount of deviation.

The physiology of suppression of images can also be studied. Many cases, in which there is an undoubted history of Strabismus, seem to have righted themselves. To all appearances the eyes are straight, but by the stereoscope or the Bishop-Harmon diaphragm test, there is found to be no binocular single vision. Mapping out of the blind spots or fields as above, will show that suppression is accompanied by, and probably accomplished, by moving the image off the macular area. Five or six degrees is sufficient to produce the result.

Hemianopsia (Blindness in one half the visual field) due to pituitary disease is rare but characteristic.

Defects anterior to the chiasm lack homonymity; they are unilateral but involvement of the second field is not unusual and immediately suggests a spread to the chiasm.

As a matter of fact nearly all of the scotomata which attract attention proceed from either the blind spot or the fixing point, or from both of these places, and then tend to spread toward each other and blend. Priestly Smith says that in glaucoma, the 10 degree and 25 degree zones are the important ones, but it should be remembered that these zones are oval. The Mariotte blind spot is at one end and the other is near the fixing area.

In glaucoma, the slender extension of the Mariotte blind spot either up or down, or both, may be detected with the test object of ½ degree white or 1 degree red, also green will prove to be serviceable, but the red test object seems preferable. This finger-like form later takes the shape of an arch, reaching the all important fixing area and menace same. When it has become large it is called Bjerrum's Sign; the slender process is called Seidel's Sign. Bjerrum's Sign may later broaden out at the horizontal meridian and remove a sharp angle from the field, giving Roenne's Nasal Step.

Some may believe that the glaucomatous eye loses vision only by a steady contraction of the peripheral field and that vision will remain good as long as the field is of fair size. It seems

now evident that independent of peripheral contraction, central or paracentral changes such as are described above, may affect the central few degrees and seriously impair the vision even though the margins of the field may not be appreciably affected. It is not wise to overlook the central and para-central areas, including the blind spot, in glaucoma. If one eye is already bad, as is not infrequently the case with patients coming for relief from poor vision due to glaucoma simplex, no other method of examination is equal to that with the Stereo Campimeter and binocular fixation.

There is one peculiarity of the human eye which should be taken into account and that is the form of retinal fatigue known as Troxler's Phenomenon. When one gazes steadily upon some design in bright colors, a strife for supremacy of the impression of one part of the field over another soon begins. One portion of the field will suddenly fade and another will at the same moment become unusually bright, giving way in its turn to another portion of the field, and so on. To avoid this in field examinations, the examination must be as short as is possible, and the chart used in measuring and orienting the field, must be printed in subdued tones. The examination should be made by outlining the defect upon the surface of the campimeter slate, transferring to permanent record form later, and not at the expense of the patient's fixing power; causing retinal exhaustion must also be avoided. These permanent record forms need not be of the same size as the campimeter slate, and for convenience, record charts of about one-half the size of campimeter slate may be used.

Visual acuity tests are confined to the central area of "vision of detail." We do our reading with a very small part of the field of vision and a very small defect can materially affect the ability to read test types. Conversely, a material reduction of the peripheral field is possible with little effect upon the visual acuity. As a general proposition, then, we may say that poor vision caused by defects other than optical, means central scotoma. To be sure, if the lesion is located in the cornea, lens or vitreous, the effect is diffuse and not to be outlined, but as the cause is visible to the examining eye, a field test is not necessary.

In most chorio-retinal lesions, the lesions are to be seen with the ophthalmoscope, but outlining of the defects is frequently of great value. The visible lesion in the choroid or retina may not be, and frequently is not, the lesion which produces the visual defect. Not infrequently, two macular areas will be nearly alike as one might imagine, spotted over liberally in cases of Albuminuric or Diabetic Retinitis, but one retains good vision while the other does not. Small hemorrhages affect the vision more than white spots. Most valuable information can be obtained in traumatic cases which not infrequently have serious losses of vision with but little macular change. Examinations on successive days will soon determine whether a defect exists or not; convert a subjective symptom into an objective one and confirm its existence. In cases of retro-bulbar neuritis, we must depend upon field study even more, because no positive information can be found with the ophthalmoscope.

The defect may be outlined in two ways, viz., "from test object visible to test object invisible" or "from test object invisible to test object visible," the zone between the two areas being the zone of doubt. For the normal blind spot the zone of doubt runs about 1 degree. A wide zone of doubt for a defect or for the blind spot implies an active process.

The examination usually begins with a study of the central two or three degrees. Even a relative central scotoma of one or two degrees will have a serious effect upon the visual acuity. A way of rapidly demonstrating the presence of a central defect is to place a ½ degree test object, with the edge toward the patient, over the central fixation point of one eye. This test object may then be quickly rotated so that the color is exposed for a moment, and then turned away again and another color exposed, until white, blue, green and red have been shown. Chorodial and retinal defects will show early change in recognition of blue. Nerve cases will show green affected first and soon red, blue and white remaining relative while green

and red may already have become absolute.

With the average eye the field for red ½ degree test object runs about ten degrees and the green about seven or eight, so the 1 degree test object for colors should be used in any blind spot work. The field for ½ degree white test object is very large so that this size white test object is suitable for any work on the slate anywhere unless the defect is very large or central vision very poor.

The illumination of the Campimeter Slate in field work is an important factor, and a standard lamp, furnishing the character of average daylight from a north window, will serve the purpose. As a matter of fact artificial daylight of a standard quality is better than actual daylight, which varies enormously throughout the year, while the quality and intensity of an artificial daylight lamp can be controlled. The control of the illumination is an essential factor, particularly when examining the patient with colored test objects. Unless illumination is perfect, results with blue test object are of little value and green likewise suffers. Red is a more robust color and white stands up best of all under adverse conditions. When repeated observations of the same case, perhaps weeks or months apart, are to be made in order to follow the progress of any case, uniform and unvarying illumination is essential. In order to fulfill the requirements of an artificial daylight lamp for this purpose I designed a Lino-lite lamp of suitable dimensions with proper screen and protection shield. This lamp is adjustable and proved to be most useful in standard work.

The Stereo Campimeter is intended for intensive examination of central and para-central area, which is the most important part of the field. It is not offered as a substitute for the perimeter, which is the instrument for obtaining the outline of the peripheral fields. Stereo Campimetry requires patience and thought on the part of the operator and intelligent co-operation on the part of the patient; but a little study will show that the widespread idea that the perimeter is fitted for all kinds of field examination is a great error. After learning how easy it is to show these central defects by using the proper methods, we will realize how many have heretofore been overlooked.

* Dr. Poser is a member of the Research Staff of the Bausch and Lomb Optical Company, and this paper was written by him and presented to the Connecticut Optometrists through their medium, "The Connecticut Optometrist."

ABSTRACT DEPARTMENT

Optometric and ophthalmic Journal articles and reprints to be abstracted should be sent to Dr. G. L. DuPlessis, 209 Yeates Building, Minneapolis, Minnesota. Only papers of interest to optometrists will be reviewed in this department.

T. E. Oertel, M. D., F. A. C. S. Ocular Disturbances in Pregnancy. The Eye, Ear, Nose and Throat Monthly, October, 1926; page 507.

It is of great importance claims Dr. Oertel that ocular disturbances arising during the period of pregnancy should receive the proper attention, because sometimes these disturbances may not only endanger vision but also the life of both mother and child.

Some of these conditions, which have been reported as being the direct results of toxemias, metabolic or blood changes of pregnancy are: disturbance of vision, night blindness, contraction of the visual field, pigmentation of the lids, corneal ulcers, conecal cornea, conjunctival hemorrhages, retinal hemorrhages, retinitis, optic atrophy, cataract, glaucoma, weakness of accommodation and muscular asthenopia.

The toxemias of pregnancy as related to the eye are usually divided into two classes:

1. The acute toxemias of pregnancy occur mostly in the latter months of pregnancy. The outstanding symptoms are headaches and spots before the eyes. There is found to be a marked albuminuria.

2. This second class includes cases in which there has been a pre-existing nephritis, which may have been unsuspected and which is now brought into activity by the toxemias of pregnancy.

In many of these cases there is a gradual or sudden loss of vision. The sight may improve in some cases after the uterus is emptied, other cases again show no improvement at all.

Dr. Oertel stresses the importance of a complete eye examination to be made in most all pregnancies in order to safeguard the welfare of both mother and child.

J. I. K.

Light Filtering Lenses in Aphakia. F. I. O. The Refractionist. (British) Vol., 15, No. 197, p. 203. 1926.

When the eye is aphakic, owing to the extraction of the crystalline lens, the main protection against excessive actinic light is removed. The remedy is to prescribe lenses which will artificially supply the deficiency. The difference in the absorption of the ultra-violet light by the various media, employed for lenses, is well marked. Pebble is in particular transparent to ultra-violet light and is therefore about the worst medium that can be used for lenses in aphakia. It is, however, but little use today, except, perhaps, in India and South America. Crown glass obstructs actinic light reasonably well, while flint glass is still better in this respect, but flint glass is soft, and therefore apt to become scratched so that in practice, it is not used. Yellow glass blocks out all the ultra-violet light and most of the visible blue and violet, but the Crookes glasses are the best, for choice the A.1 for indoor use and near work and the A.2 for outdoor use. The climatic conditions, however, have a bearing in this connection, and in sunny climates the Crookes B glasses would be preferable. T. O. B.

OPTOMETRIC NOTES

THE JEANERET SYSTEM OF ZYLONITE FRAME MEASUREMENTS

The systems heretofore in use have invariably taken the pupillary distance as the basis of measurement, the dimensions being written in terms of millimeters, fractional inches and descriptive words in various combinations.

The new system to be used by all Zylonite frame makers uses the actual distance between lenses (measured from the bottom of the lens groove) as the basis of measurement, the pupillary distance being obtained by adding a lens of the required size. All dimensions of the new system are in millimeters and indicate the width, height and plane of the bridge. Reading from left to right, the first two numerals of a frame size represent the width between lenses, the third numeral the bridge height and the fourth numeral the plane of the bridge (on plane, outset or inset).

For example, a frame the dimensions of which were formerly 60 m/m x 1/16" x 1/16" in 40 m/m eye size would read 2022 in all eye sizes. The first two figures (20) representing the distance between lenses, the third figure the height of the bridge (2 m/m) and the fourth figure the plane (2 m/m outset). This same frame with a below and inset bridge would read 20-2-2.

It will be noted from the above explanation that not more than four figures and two minus signs are required to express any standard size combination.

The advantages of a standard system for expressing Zyloñite frame sizes are obvious and credit should be given to Mr. A. Jeaneret of the Bay State Optical Co. for this contribution.

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BARUCH SPINOZA

He was one of the dreamers, this lens maker of Holland. He dreamed new dreams and wrote of them. His were not dreams that could be approved by the thought of the time, because they ran contrary to long established beliefs, though in our own time he has been ranked among the major prophets and scientists.

He was excommunicated by his own people and was disowned by all others as "a traitor to church and state," for he had written against all the popular beliefs of that time. Rejected by all men of his own time, he now lives as an immortal, accepted by the world of today. Leading European students of philosophy and science are on the Sociatas Spinozana of Amsterdam, which will commemorate the two hundred fiftieth anniversary of Baruch Spinoza, the thinker, philosopher and lens maker.

The committee will unveil a memorial on the spot in the Hague, where Spinoza is believed to be buried. The house in which he once lived has been bought to be preserved forever as a memorial to him. The memory of Baruch Spinoza, the pioneer lens maker, is to be honored in leading centers throughout the world. Optometrists are urged to participate where possible in honoring this pioneer in the field of optics.

J. I. K.

PRICE ADVERTISING

The advertising "cut price" optometrist presents a problem which organized optometry **can not** and **must not** overlook. Not because of the fact that this class is taking away patients from the legitimate optometrists, but because of the fact that the cut price group is attempting to tear down our professional prestige faster than organized optometry can build it up. Not only that, but they are actually undermining the public confidence in the profession of optometry.

This class of shysters to be sure is to be found not only in our ranks but in the ranks of other professions as well. For instance the legal profession is taking cognizance of the fact that the public is more and more beginning to take seriously the saying that "an honest lawyer is the **finest** and **rarest** thing God ever created," and that learned profession determined to clear its ranks. As a result of it in many states, attorneys who conduct questionable practices are disbarred by the courts from practicing law. The members in that profession feel that if they are to keep the respect, good will and

confidence of the public they will have to clean house and get rid of the undesirable element. They are succeeding in accomplishing this end by using the disbarment process.

Optometry MUST do likewise. We have to clean house. New York State has taken the lead. The regents adopted recently some new rules covering the practice of Optometry. The following are of particular interest: "That the license of an optometrist be revoked for (a) any conduct or advertising of a character tending to deceive or mislead the public, (b) Advertising definite fixed prices when the nature of the professional service rendered and the material required must be variable." If these rules be properly enforced it will eliminate a class of parasites, who constantly prey upon the public.

Now that New York State has shown the way it is up to the rest of the states to fall in line. In most states the Board of Optometric Examiners have the power to make such a ruling under the ethical conduct clause of the Optometry laws. Optometrists in these states should **demand** that their State Boards take some action to protect the interests of the public as well as of optometry. In other states where the Examining Boards do not have the power to make such a ruling, the optometry laws should be amended to prohibit the advertising of definite fixed prices of glasses where the material furnished is dependent upon the findings of an examination, or the State Board be given the power by law to revoke the license of any optometrist found to be deceiving the public.

J. I. K.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

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Reports of Society Proceedings in Delaware should be sent to Dr. M. Burton Meyer, 101 West Eighth St., Wilmington; in Iowa to Dr. D. A. Kinney, Charles City; in Maryland to Dr. J. F. Andreae, Baltimore; in Minnesota to Dr. J. A. Large, Winona; in Nebraska to Dr. C. A. Perrigo, Freemont; in North Dakota to Dr. A. S. Anderson, Williston; in Oklahoma to Dr. E. B. Alexander, Duncan, and in Vermont to Dr. L. P. Folsom, So. Royalton.

THE COMING A. O. A. CONVENTION

Dr. Paul W. Kimbal, assisted by Doctors Leese, Silver, Dicus and Kraskin, all of Washington, D. C., are hard at work getting the plans rounded out to make the coming convention of the A. O. A. in their city one to be long remembered. The convention dates are June 20th to 24th and the thousands of members of this organization are urged to plan their summer vacations so as to spend at least a week in the Nation's Capitol, and at this largest Optometric Congress. The convention will be held at the Willard Hotel.

THE EYESIGHT CONSERVATION COUNCIL OF AMERICA

The publication, styled "Bulletin 5," is addressed chiefly to those who have the opportunity to spread the gospel of eye care. "Lantern Slides and Lecture Material on Eyesight Conservation" is the title which describes the content.

The need for conservation of vision is asserted in a carefully written introduction which outlines a serious existing situation, its causes and the necessity for organized action.

How to carry the message of eye care through protection, correction and proper lighting to the masses is a problem which the Eye Sight Conservation Council of America through "Bulletin 5" has greatly simplified for teachers, health workers and members of other professions who by vocation or training are in a position to render a helpful service to society by delivering lectures before groups of pupils, teachers and parents, before civic clubs, and kindred organizations.

After showing that millions of school children are at a disadvantage because of poor eyesight and that sight is an important factor in accident prevention, the publication

stresses the value of good illumination, and groups other facts as persuasive arguments for eyesight conservation.

The physiology of the eye is treated so clearly that the lecturer will have no difficulty in conveying the fundamentals to an audience. Optics are taken up at considerable length. The publication is profusely illustrated throughout. There are illustrations of 145 lantern slides, each accompanied by descriptive text and data.

Also, "Eye Sight Stories" for children are charmingly written examples of how the young can be taught to realize the worth of sound vision.

Eye Sight Conservation Bulletin No. 5 will be sent to any interested person for 40 cents, which is merely to cover printing cost and mailing. The lantern slides may be rented or purchased of the Council at a nominal rate.

VERMONT OPTOMETRISTS, ATTENTION

The coming New England Convention March 7-9 in Boston at Boston's newest hotel, will be the "Best Ever." Twenty per cent of your dues go to support this annual event. Are you making it yield you good returns?

At the first New England Convention, Vermont members attended to a larger proportion of their total than any other New England State. They should do so this year. Vermont members should live up to the time honored tradition of the state and "What we don't have in quantity let's make up in Quality."

Dr. L. P. Folsom, Sec'y.

MINNESOTA CONVENTION

The annual convention of the Minnesota State Association will be held February 14, and 15, at the Radisson Hotel, at Minneapolis.

A very fine program has been arranged for. Drs. T. G. Atkinson, Wm. B. Needles of Chicago and L. L. DeMars of Minneapolis will be the principal lecturers at the convention.

A special feature at this convention will be the broadcasting of eyesight conservation talks over the WAMD radio station on the 14th and 15th of February, also the banquet program will be broadcasted. This will furnish much publicity to optometry and the Association members, who will inform the folks in their home town of this event and ask them to **tune in** and enjoy with their optometrists an evening of fun and frolic and also listen in to the eye talks.

Much interest is being manifested by the members in the coming convention and judging from the number of advance reservations a very large attendance is expected, according to Dr. J. I. Kurtz, secretary of the Association.

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